

# Air Quality Data Analysis Tools

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Region 4

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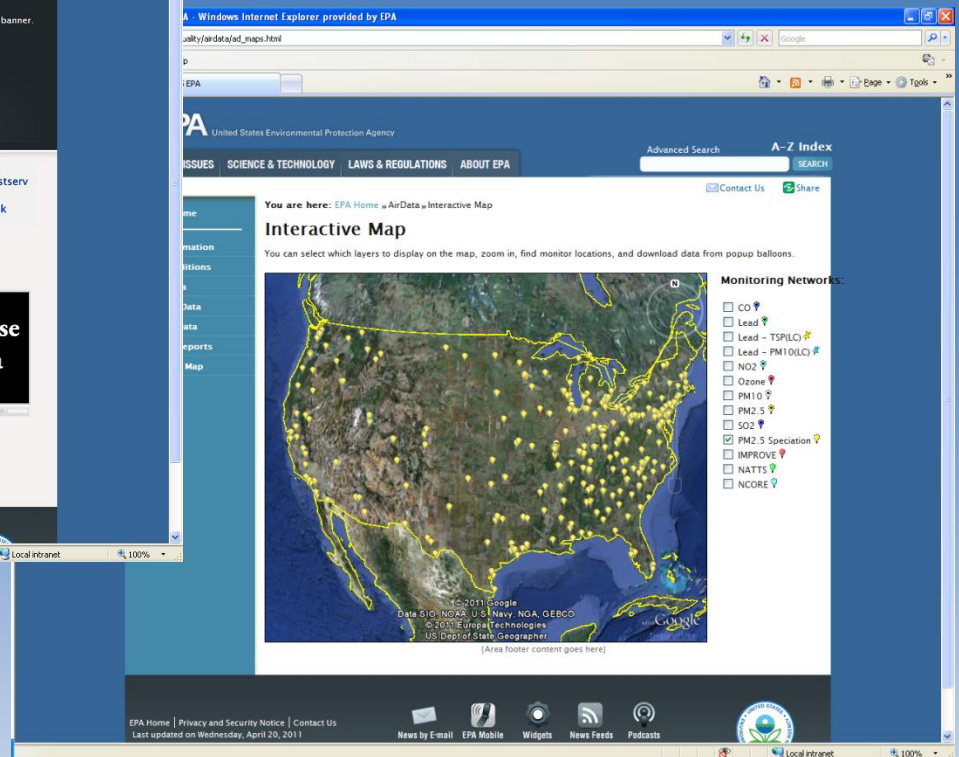
# AirData / AirExplorer Consolidation: Background

- OAQPS manages two similar websites – AirData and AirExplorer – that provide access to air quality data and visualization tools
- We are working to consolidate those into a single, updated, central point for accessing air quality data and information
- It will be connected directly to the AQS Data Mart, providing access to the most recently loaded data
- It will be a resource for a broad range of stakeholders – general public to state and local air quality agencies
- It will be adaptable to meet constantly changing needs

# AirData / AirExplorer Consolidation: Update

- New site will leverage most popular components from the existing sites
- New interface will be better-organized and functionality will be improved
- Draft site has five major components
  - Download – easy access to AQS raw data
  - Locate – is there data for this pollutant during this time period in this location?
  - Visualize – many of the tools from AirExplorer + new ones
  - Map – view monitoring network kmIs within the Web browser or open in Google Earth
  - Reports – annual summary reports from AirData (AQI & concentration) + more detailed technical reports
- Target completion date – August 1, 2011

# Sneak Peek (very early draft stage)



# EPA Remote Sensing Information Gateway (RSIG)

[epa.gov/rsig](http://epa.gov/rsig)

- Graphical mapping of many data sources
  - Monitoring
  - Satellite
  - Modeling
- Streams only the needed data
- Aggregates separate data files into a single stream
- Built-in visualization
- Saves data to standard formats

# RSIG Data Sources

- **Air Monitoring:**
  - AIRNow data, via the AIRNow Gateway
  - U.S. EPA's Air Quality System (AQS)
  - Measurements of OZone, etc. by Albus airCraft (MOZAIC) data
- **Satellite:**
  - NASA's Moderate Resolution Imaging Spectroradiometer (MODIS) data
  - NOAA/National Environmental Satellite, Data, and Information Service (NESDIS) biomass burning data
  - GOES GASP AOD data (Geostationary Operational Environmental Satellite Aerosol Smoke Product Aerosol Optical Depth)
  - Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation (CALIPSO) data
- **Modeling:**
  - U.S. EPA's Community Multiscale Air Quality (CMAQ) model output
  - Statistical Fused Air and Deposition Surfaces Model (SFADS)



Data Sources:

Data source  
deactivated

GASP

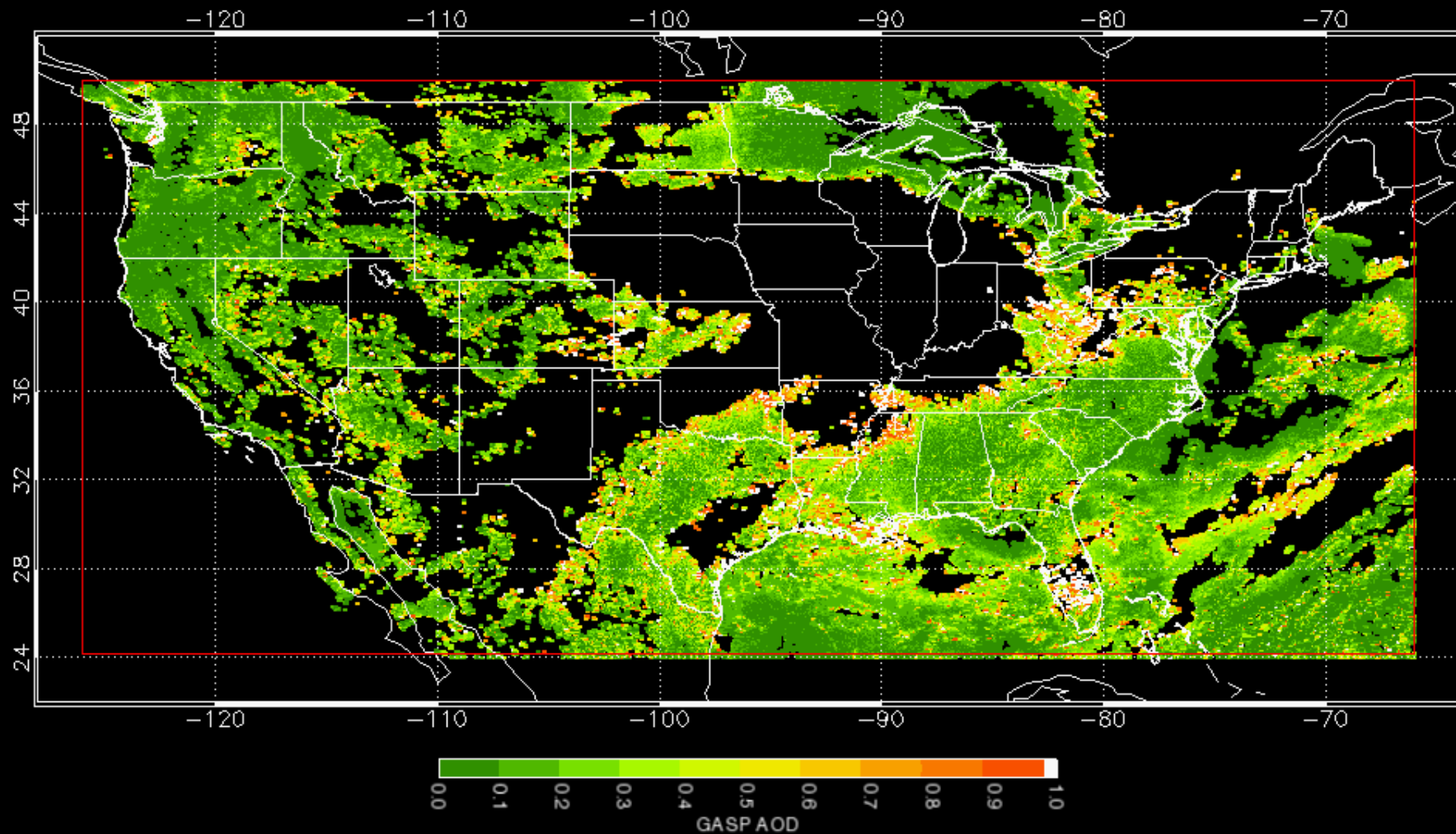
Data source  
deactivatedData source  
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Aux Vars Scenario Options Pre

Variables:

AOD

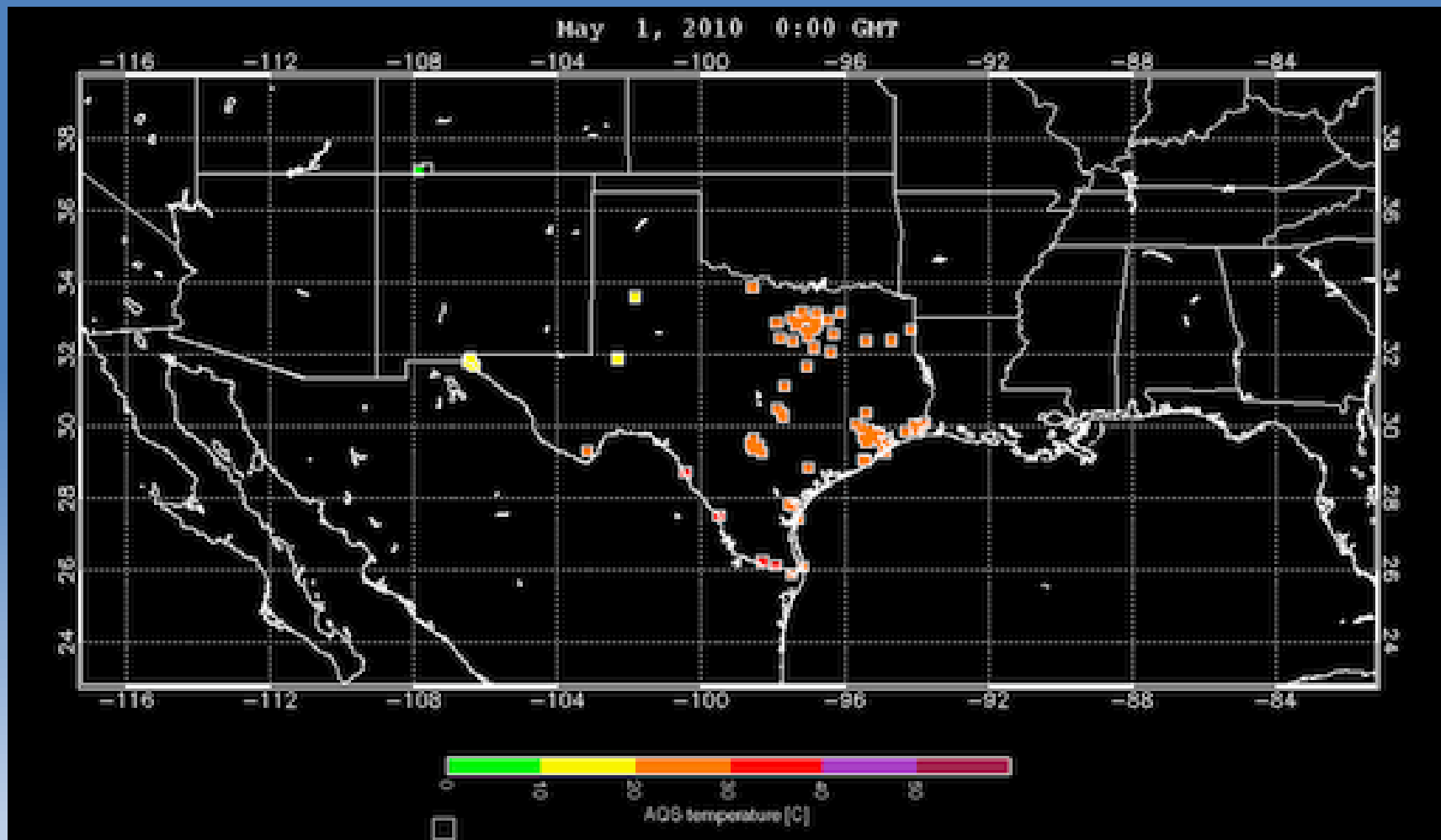
Jul 4, 2009 13:00 GMT



Use the Playback Controls to view the animation.

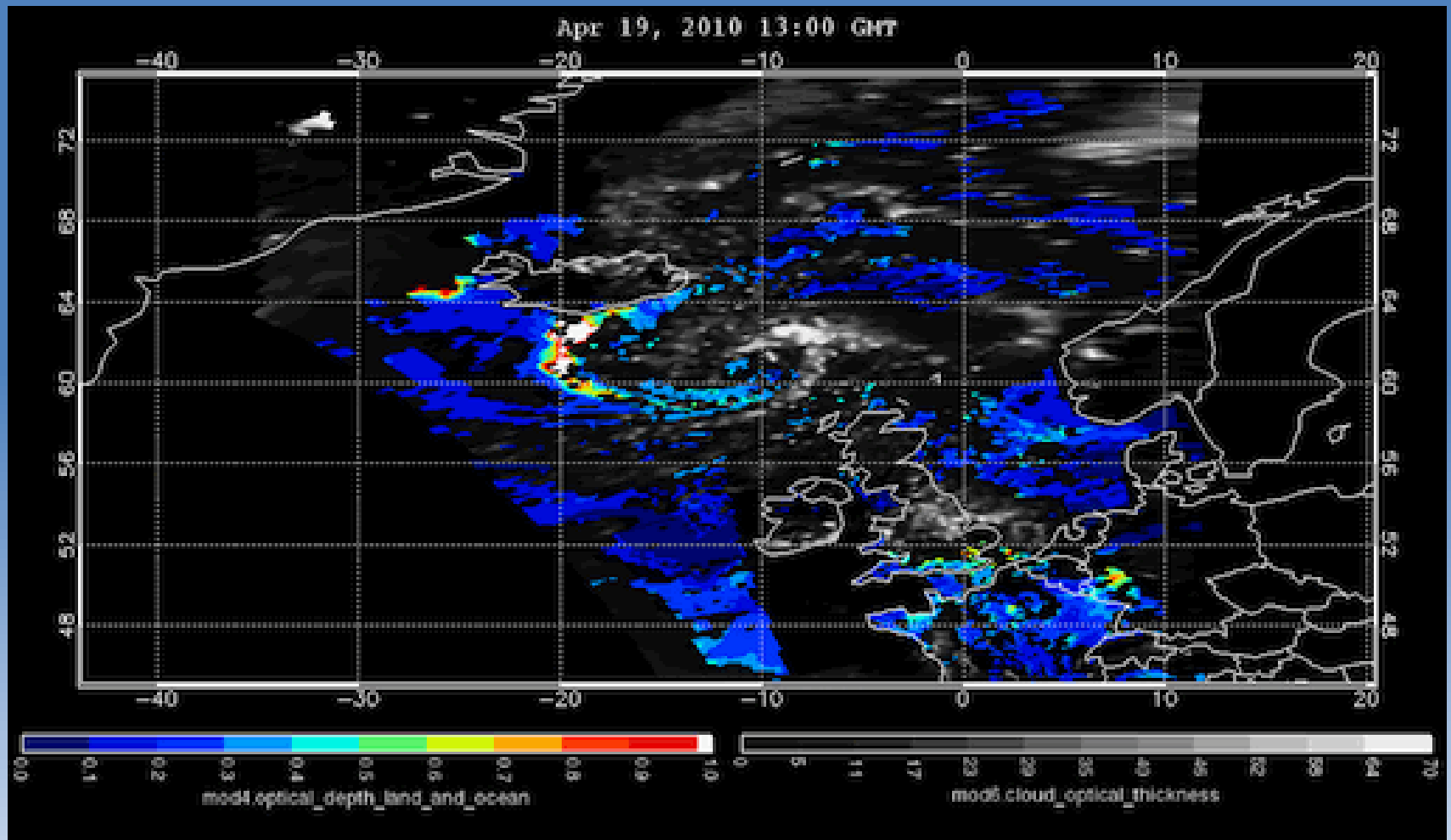
When finished, press 'Clear Image Cache' to process another scenario.

# AQS SO<sub>2</sub> Data

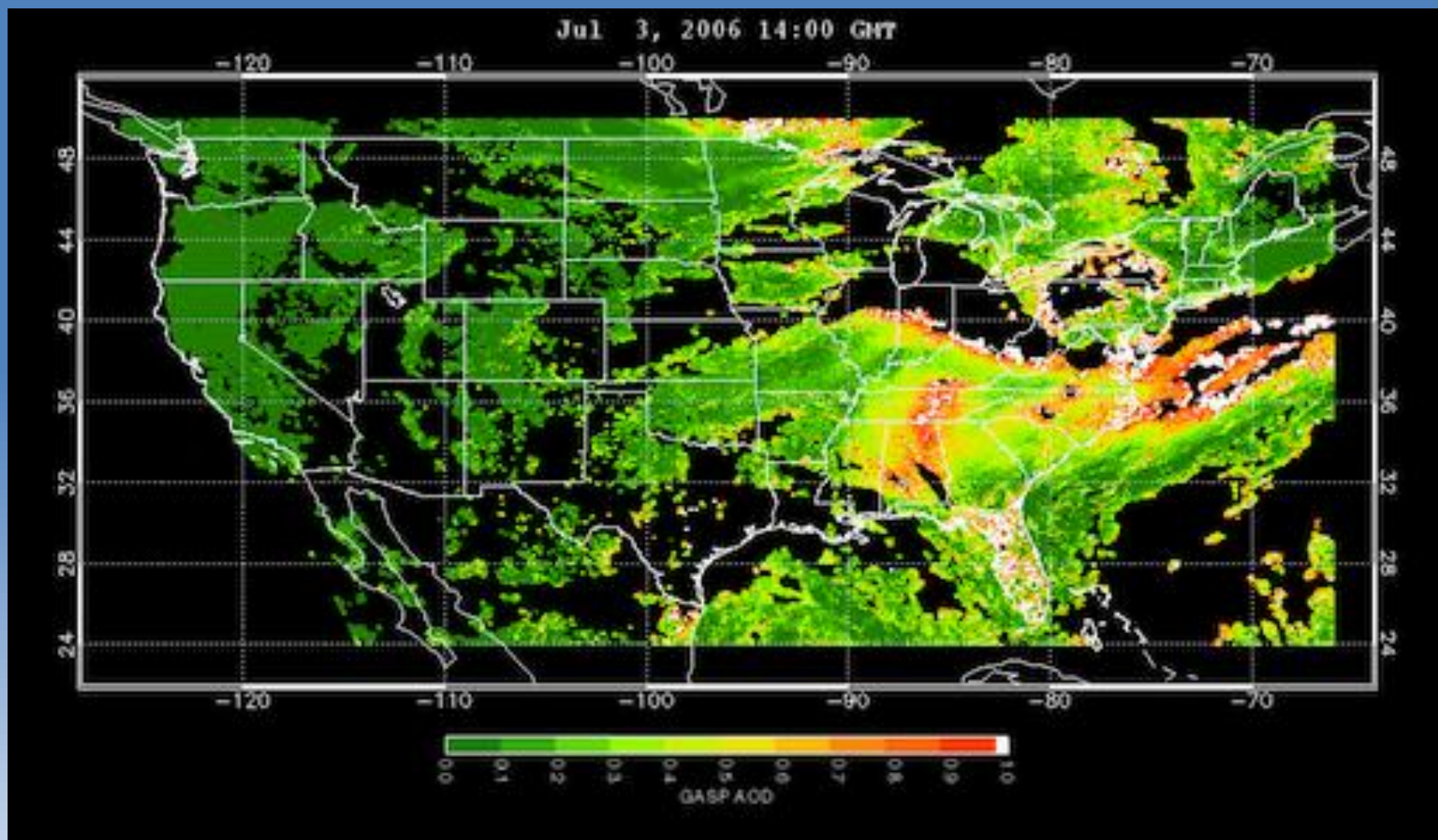




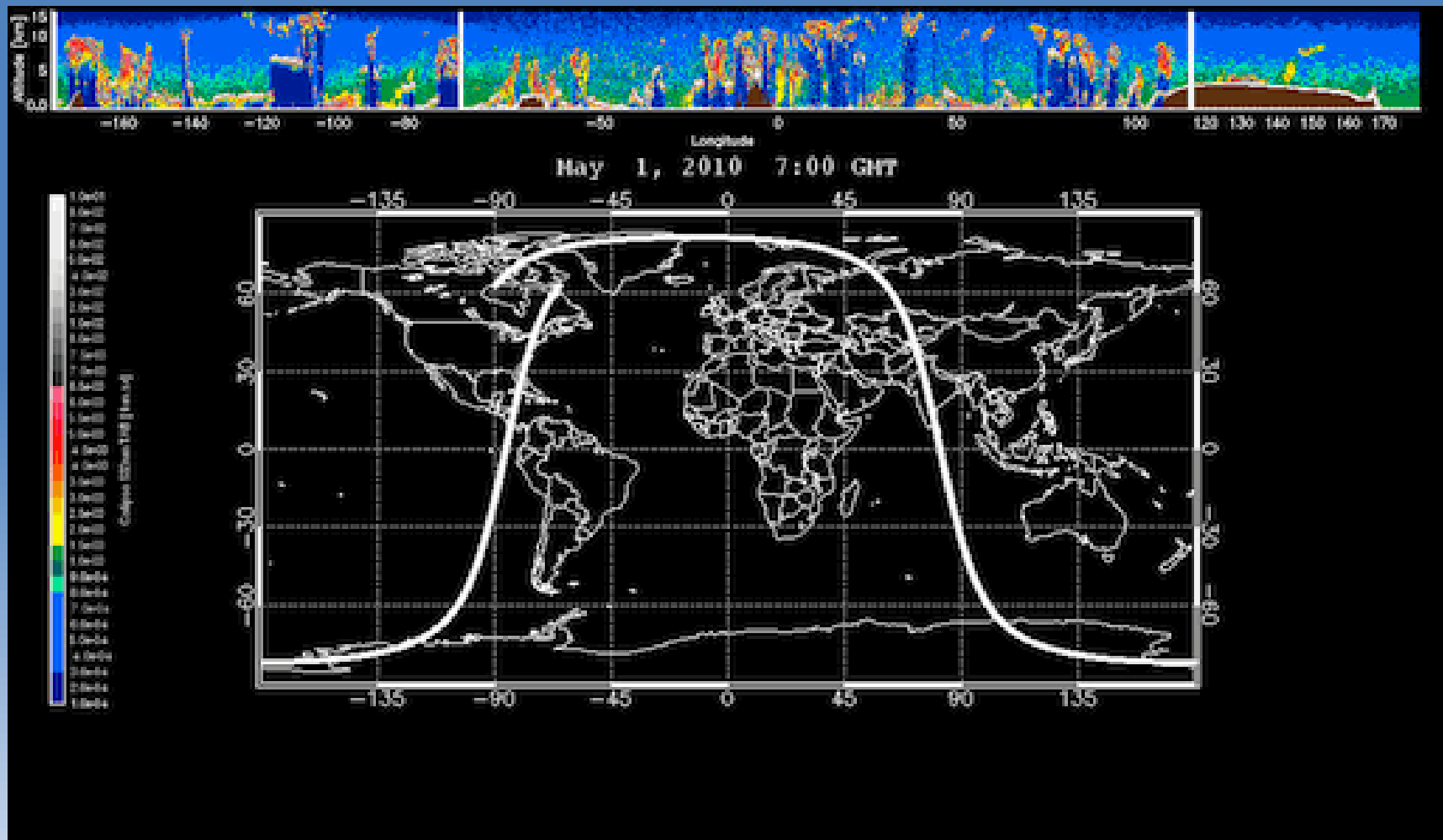
# MODIS Data: Icelandic Volcano Plume



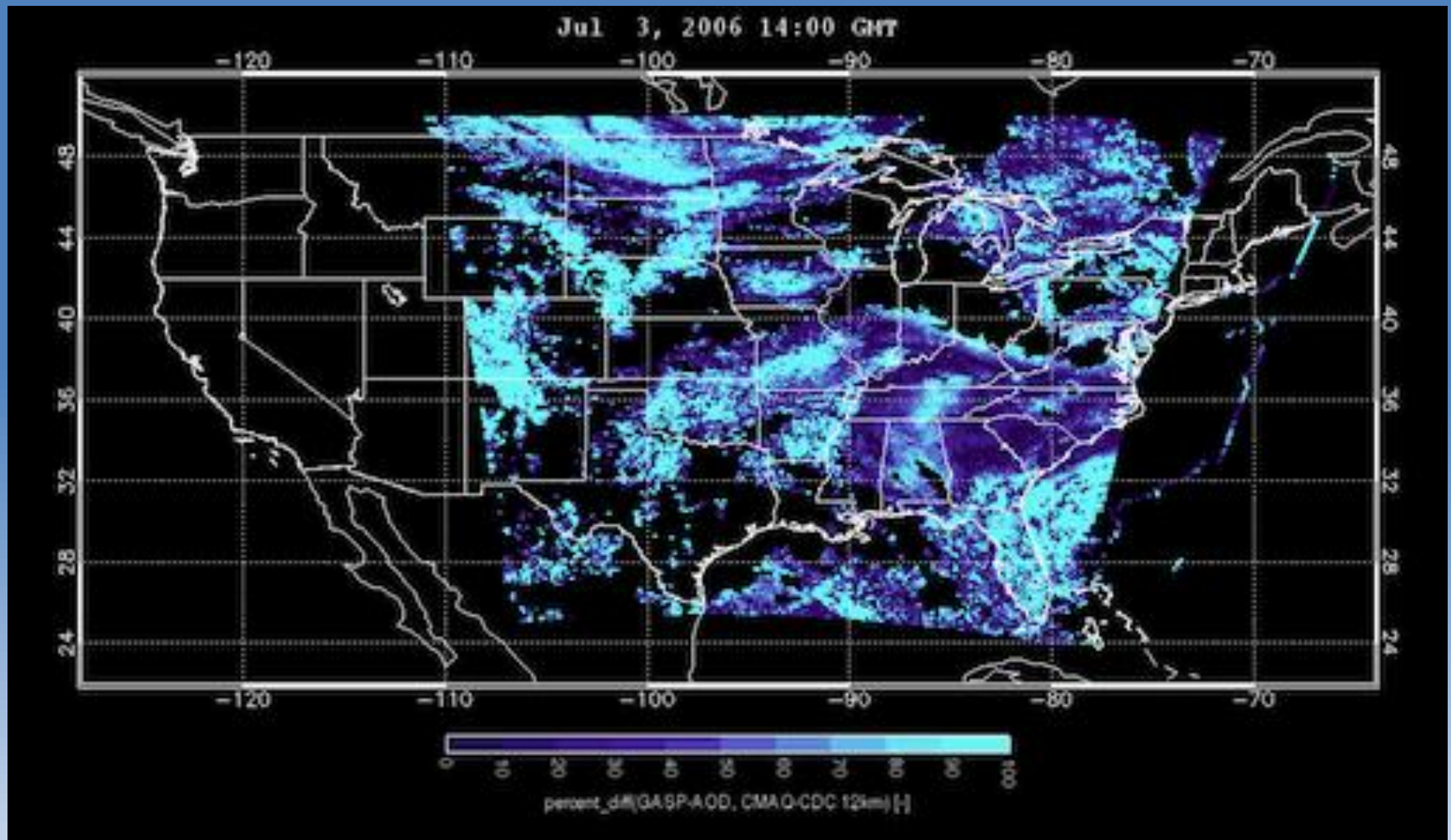
# GOES GASP Aerosol Optical Depth



# CALIPSO



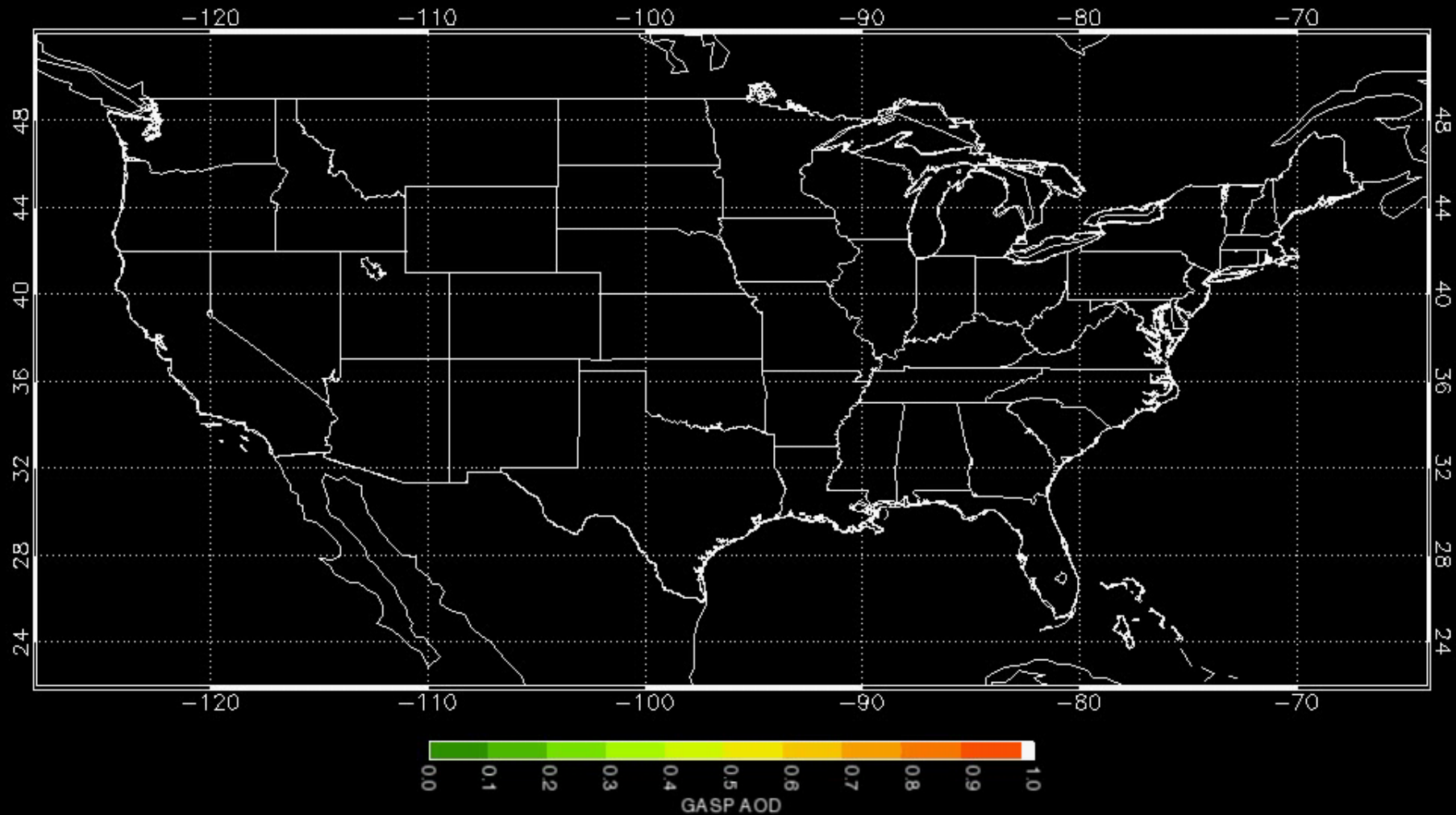
# Difference Between Datasets



Percent difference between GOES AOD and CMAQ

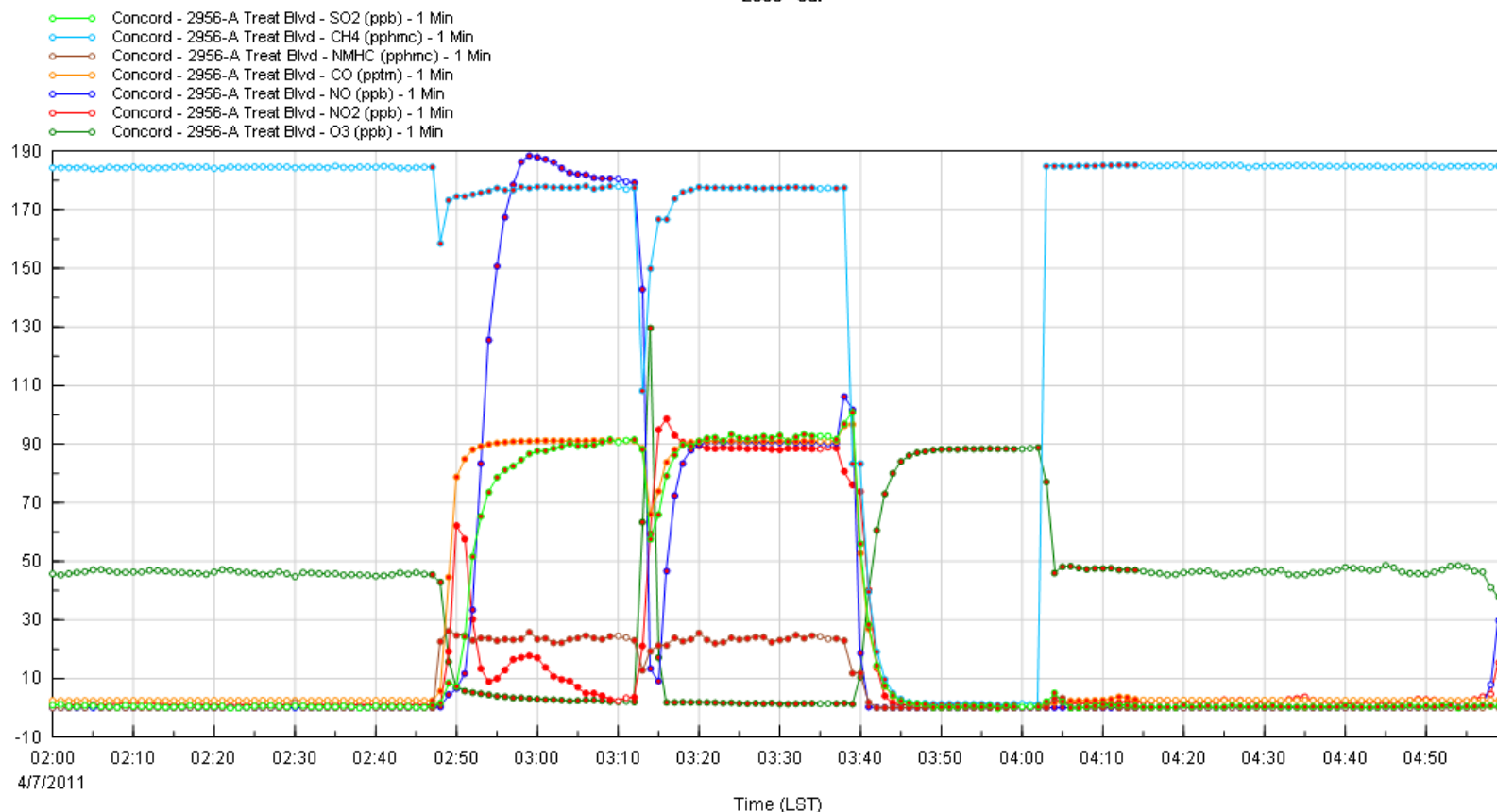


May 31, 2007 0:00 GMT



# Data Management System (DMS)

2036 - cal



# What is DMS?

- a Microsoft SQL database that provides a powerful, low-cost management of real-time environmental data
- a 'back-end' tool that accepts several data formats (files) from any number of sources- it is not a data collection system
- accessible through User Interface software installed on client computers (VisualBasic.NET program requiring XP, Vista, or Windows 7)
- assigns security access rights to user groups and/or monitor (site-parameter) groups

## What Does It Do?

- imports continuous (raw 1-min. plus avgd) and non-continuous (FRM, PM<sub>10</sub>, toxics, PM<sub>2.5</sub> spec., metals, HC species, etc.) data
- aggregates data hourly, daily, etc., for review, export, and analysis
- provides strip charts and other tools for data viewing/editing/analysis
- supports real-time data exports to AIRNow (in AQCSV format), web sites and other public venues in user-configured formats
- locks reviewed data for export to AQS (AQS format now, XML format soon) and can import AQS RD records to backfill DMS with past data



# What Else Does DMS Do?

- stores instrument performance data using optional OpCodes (status flags that differentiate between ambient data and other measurements (zeros, precision checks, spans, etc.))
- flags incoming data as suspect or invalid based on autoQC tests configured by users, and optionally sends email alerts to users
- maintains electronic data chain-of-custody log for autoQC checks, data reviews and edits
- optionally tracks instrument status, location, and performance
- provides integrated electronic logbooks for monitoring stations and instruments

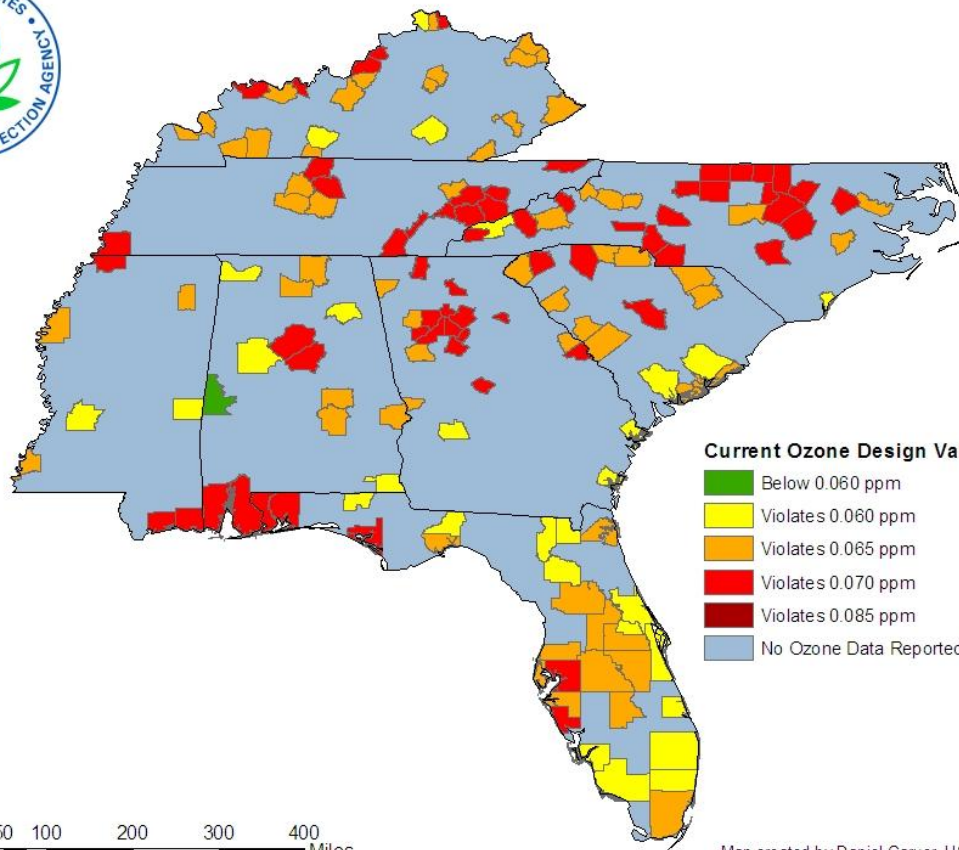
## Who Developed and Uses It?

- Designed/developed by Bay Area AQMD with Sonoma Tech., Inc.
- Used by South Coast AQMD, AIRNow, AIRNow International (in Shanghai, China), and California Air Resources Board

# What is not part of DMS?

- DMS is software – a database and client software – and requires:
  - a Microsoft SQL server host environment for the database
  - a DMS administrator to manage system tasks such as DMS configuration, backups, user rights, and other actions not supported by the client software
  - broadband communications (LAN, internet) between the DMS server and client computers
- DMS is not a data collection system
  - A Data Acquisition System (DAS) or datalogger can ‘push’ data directly to the DMS server or an FTP server (for transfer to DMS)
  - Polling computers can collect data from DASs, dataloggers, web services, or directly from instruments and upload to DMS
  - Task schedulers on the DMS server or other computers can execute procedures for recurring data import (and export)

# Ozone Watch Report: 2011 Version Coming In May



## Current Ozone Design Value 2008-2010

- Below 0.060 ppm
- Violates 0.060 ppm
- Violates 0.065 ppm
- Violates 0.070 ppm
- Violates 0.085 ppm
- No Ozone Data Reported

Map reflects data reported to AIRNow through: 11/7/2010

Map created by Daniel Garver, US EPA Region 4  
Air quality design values are based on incomplete data  
and should be considered DRAFT  
Please e-mail questions to [Garver.Daniel@epa.gov](mailto:Garver.Daniel@epa.gov)

# For more information, please contact:

- Air Data and Air Explorer:
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